1-1-1980

Comparison Of Personality Traits Of Female Athletes And Non-Athletes At John Brown University

Lynn Best
Eastern Illinois University

THESIS REPRODUCTION CERTIFICATE

TO: Graduate Degree Candidates who have written formal theses.

SUBJECT: Permission to reproduce theses.

The University Library is receiving a number of requests from other institutions asking permission to reproduce dissertations for inclusion in their library holdings. Although no copyright laws are involved, we feel that professional courtesy demands that permission be obtained from the author before we allow theses to be copied.

Please sign one of the following statements:

Booth Library of Eastern Illinois University has my permission to lend my thesis to a reputable college or university for the purpose of copying it for inclusion in that institution's library or research holdings.

August 6, 1980 — Date

Lynn Best — Author

I respectfully request Booth Library of Eastern Illinois University not allow my thesis be reproduced because _____

_____

_____

_____ — Date

_____ — Author

m

COMPARISON OF PERSONALITY TRAITS OF FEMALE ATHLETES AND NON-ATHLETES AT JOHN BROWN UNIVERSITY

(TITLE)

BY

LYNN BEST

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

MASTER OF SCIENCE

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1980
YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
THIS PART OF THE GRADUATE DEGREE CITED ABOVE

August 6, 1980
DATE

W. Buchalter
ADVISER

August 6, 1980
DATE

M. D. McCabe
DEPARTMENT HEAD

COMPARISON OF PERSONALITY TRAITS OF FEMALE ATHLETES AND NON-ATHLETES AT JOHN BROWN UNIVERSITY

BY

LYNN BEST

BACHELOR OF SCIENCE
GREENVILLE COLLEGE

ABSTRACT OF THESIS

Submitted in partial fulfillment
of the requirements for the degree of

MASTER OF SCIENCE

in Physical Education at the Graduate School of

EASTERN ILLINOIS UNIVERSITY

CHARLESTON, ILLINOIS

August, 1980

ABSTRACT

The purpose of the study was to compare personality traits of female volleyball, basketball, softball, and tennis players and selected non-athletes at John Brown University in Siloam Springs, Arkansas.

Thirty-five female undergraduate students were selected as subjects for the study. The subjects were divided into five groups. Twenty-eight subjects comprised the University's varsity athletic teams in volleyball, basketball, softball, and tennis. Each of the athletic groups contained seven subjects. The non-athletic group, chosen at random, consisted of seven female volunteers from general education classes who had never competed on an organized athletic team.

The Sixteen Personality Factor Questionnaire was administered to each of the subjects. Following Cattell's recommendation, raw test scores were used for statistical analyses. Form A answer sheets were hand scored by the investigator using the respective scoring keys provided with the test. Results were then totaled and values for the sixteen traits assigned to each subject.

The IBM 370 Computer at Eastern Illinois University was used to calculate the mean scores, standard deviations, and the analysis variance to compare the groups on the personality variables. The .05 level of confidence was selected to determine whether the groups differed significantly.

The volleyball, basketball, softball, tennis, and non-athletic groups scored similarly to Cattell's standard population of female college students on the following sixteen factors: sociability, intelligence, ego strength, aggressiveness, surgency, conscientiousness, adventurousness, sensitivity, suspiciousness, imaginativeness, shrewdness, apprehensiveness, experimentalism, self-sufficiency, emotional control, and tenseness.

When the five groups were compared, no significant differences in personality were recorded. Intelligence and apprehensiveness were the only traits that varied greatly among the groups. Although they were not significant, the non-athletes established the highest score on the intelligence factor followed by the volleyball, tennis, basketball, and softball groups. The volleyball group scored highest on apprehensiveness followed by the basketball, non-athletic, tennis, and softball groups.

The study concluded that the personality profiles of female college athletes and female college non-athletes are similar at John Brown University. Athletes of volleyball, basketball, softball, and tennis did not represent different patterns of personality.

ACKNOWLEDGMENTS

The writer wishes to express her sincere appreciation to Dr. William Buckellew for his guidance and direction in the completion of the study.

Appreciation is also extended to Dr. Dorothy Hart and Dr. Ewen Bryden for their help in the preparation of the paper, to Miss Ida Mae Adolphson for use of her testing materials, to Mrs. Shirley Karraker for her assistance with the computer programming, and to Mrs. Annette Buesking for her help in typing the paper.

The writer also wishes to thank the selected students of John Brown University for allowing themselves to be subjects in the study.

TABLE OF CONTENTS

	Page
LIST OF TABLES	v
LIST OF FIGURES	vi
Chapter	
1. INTRODUCTION	1
Purpose of the Study	1
Importance of the Study	2
Null Hypothesis	3
Limitations	3
Definitions	4
2. REVIEW OF RELATED LITERATURE	6
Self-Concept Studies of Female Athletes . .	6
Role Conflict Studies of Female Athletes .	8
Personality Trait Studies of Athletes and Non-Athletes	9
Personality Trait Studies of Athletic Sub-Groups	11
Personality Trait Studies and Athletic Experience	13
Personality Trait Studies of Superior Athletes	14
Personality Trait Studies of Athletes on Different Teams	16
Summary	17

Chapter Page

3. METHODOLOGY 18

Subjects 18

The Personality Test 19

Testing Procedures 21

Statistical Procedures 21

4. ANALYSIS OF THE DATA 23

Presentation of the Findings 23

Analysis of Mean Sten Scores for the Five Groups on the 16 PF Test 23

One-Way Analysis of Variance for the Five Groups on the 16 PF Test 36

Discussion of the Data 40

Comparison of Personality Trait Studies of Athletes and Non-Athletes 40

Comparison of Personality Trait Studies of Athletic Sub-Groups 41

5. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . 42

Conclusions 43

Recommendations 43

REFERENCES 45

APPENDIXES 50

A. RESULTS OF THE PERSONAL INFORMATION QUESTIONNAIRE FOR EACH SUBJECT 51

B. DESCRIPTION OF THE SCALES USED IN THE 16 PF TEST 52

C. RAW SCORES FOR ALL SUBJECTS ON EACH VARIABLE OF THE 16 PF TEST 56

D. DIRECT AND INDIRECT CONCEPT VALIDITIES OF THE 16 PF TEST 61

VITA 62

LIST OF TABLES

Table		Page
1.	Mean Scores, Standard Deviations, and Mean Sten Scores for Female Volleyball Players on the 16 PF Test	25
2.	Mean Scores, Standard Deviations, and Mean Sten Scores for Female Basketball Players on the 16 PF Test	27
3.	Mean Scores, Standard Deviations, and Mean Sten Scores for Female Softball Players on the 16 PF Test	29
4.	Mean Scores, Standard Deviations, and Mean Sten Scores for Female Tennis Players on the 16 PF Test	31
5.	Mean Scores, Standard Deviations, and Mean Sten Scores for Female Non-Athletes on the 16 PF Test	33
6.	Results of One-Way Analysis of Variance for Volleyball, Basketball, Softball, Tennis, and Non-Athletic Groups on the 16 PF Test	37

LIST OF FIGURES

Figure		Page
1.	Profile of Mean Sten Scores for Seven Female Volleyball Players on the 16 PF Test	26
2.	Profile of Mean Sten Scores for Seven Female Basketball Players on the 16 PF Test	28
3.	Profile of Mean Sten Scores for Seven Female Softball Players on the 16 PF Test	30
4.	Profile of Mean Sten Scores for Seven Female Tennis Players on the 16 PF Test	32
5.	Profile of Mean Sten Scores for Seven Female Non-Athletes on the 16 PF Test	34

Chapter 1

INTRODUCTION

Much of the research which has been done in the areas of physical education and athletics has focused on performance and the physical characteristics of athletes such as skill, speed, and strength. Today, it is generally accepted that athletic performance cannot be predicted on the basis of motor ability alone. Coaches and sport psychologists have come to believe that personality plays a highly significant role in athletic performance as well. As a result, researchers in physical education and athletics now utilize personality-type tests to examine the degree of a particular trait an athlete possesses. Studies which investigate personality traits of athletes may give the coach a better understanding of individual players.

Purpose of the Study

The purpose of the study was to compare personality traits of female athletes in selected sports and non-athletes at John Brown University.

Importance of the Study

Coaches in the past seemed to have been more concerned with their athletes physiologically than in any other way, and physical training was thought to be the key to success. Recent investigation in the area of athletics, though, has revealed a need to understand the psychology of sport as well. As research in sport psychology has progressed, evidence has been made available to show that personality plays a very significant role in athletic performance and achievement. Unfortunately for women coaches, very little research concerning the personality characteristics of the female athlete has been completed since sports participation for women has been limited until recent times.

Early research concerning the personality has provided a basis for further study. One of the more popular methods of studying the athlete and his personality was introduced by Gordon Allport (1:110). This particular method, revised by Cattell (1:110), defined a trait as the unit of personality. Research involving personality traits has continued and has proven to be a very valuable part of other studies conducted by such researchers as Eysenck and Guilford (1:110). Due to the theoretical positions and empirical data provided by these men and other concerned researchers, the concept of personality traits may now be examined as a means to a better understanding of behavior in sport.

Research conducted for the purpose of examining traits of female athletes can be very beneficial to the coach. The need for understanding personality has been expressed by Frost (5:169) in the following manner:

> The study of personality traits and their relationship to sports can assist the coach and teacher in the selection of players, in the guidance of those who seek help in choosing a sport, in teaching effectively, and in understanding the behavior of those who come under their leadership.

Understanding the personality traits of athletes will also be beneficial to the coach who is concerned about her relationship with her players. According to Neal and Tutko (13:160), to be truly a success, the coach needs to consider the feelings of her players, to show a sincere interest in the welfare of her players, and to recognize the worth of her athletes as individuals. This will become more of a reality as the coach begins to understand the various personality traits which exist within the members of her squad.

Null Hypothesis

In the conduct of this study, the null hypothesis was assumed. There is no difference in the personality traits of John Brown University female athletes in volleyball, basketball, softball, and tennis, and non-athletes.

Limitations

The study was limited to a small sample of female

athletes and selected female non-athletes at one private university campus.

Definitions

The following terms have been defined as they were used in this study.

Athlete

Any member of an intercollegiate or interscholastic athletic program was defined as an athlete.

Non-Athlete

A non-athlete was a person who had never participated on any organized athletic team.

Personality

Personality was the combined distinctive individual qualities a person possesses which will permit a prediction of how he or she will respond in a given situation.

Role Conflict

The struggle within a person to identify his proper position in life was considered to be a role conflict.

Self-Concept

Self-concept was regarded to be the impression which a person believes to be characteristic of himself.

Trait

A trait was considered the basic unit in describing

personality. It is a relatively permanent feature of behavior which distinguishes one individual from another.

Chapter 2

REVIEW OF RELATED LITERATURE

Sport psychologists have recently become interested in studying the personality of the female athlete. Researchers have attempted to answer seven questions of primary concern: 1) How does the female athlete perceive herself? 2) Does sports participation for females create a role conflict? 3) Do personality traits of female athletes and non-athletes differ? 4) Do personality traits of female athletic sub-groups differ? 5) Does athletic experience change personality? 6) Do superior female athletes possess specific personality traits? 7) Do athletes from different types of schools possess different personality profiles?

The review of related literature in this chapter has been organized to present research findings which pertain to the seven questions listed above.

Self-Concept Studies of Female Athletes

Personality tests, self-concept scales, and a variety of questionnaires have been administered to different types of college athletes. The purpose has been to determine if differences exist in the self-concept of athletes as compared to non-athletes. Although some inconsistencies exist, most

researchers have concluded that athletes generally possess a more positive self-concept than do their non-athletic counterparts.

Snyder and Kivlin (22:191-199) examined the self-concept of athletes and non-athletes. Their findings indicated significantly more positive attitudes by women athletes than non-athletes on measures of psychological well-being and body image.

Vincent (24:218-225) researched the self-concepts of female college athletes, non-athletes, and physical education majors by using the Tennessee Self-Concept Scale. The athletic group consisted of participants in team and individual sports. The physical education majors group consisted of both athletes and non-athletes. Vincent recorded opposing results. The college women athletes were not significantly different from the other two groups in how they perceived themselves.

Kukla and Pargman (10:375-380) conducted a clinical interview to determine if differences in self-concept exist between athletic groups. Varsity and intramural female athletes were selected as subjects for their study. Through the use of content analysis, they found that varsity subjects perceived themselves to be superior in the personality traits of aggression and dominance.

In a similar investigation, Schultz (19:80-82) selected high school female athletes and non-athletes as subjects for his study. The Tennessee Self-Concept Scale was

administered to each student. The female athletes possessed more self-confidence, self-acceptance, and willingness to commit themselves to ideas and goals than did their non-athletic peers.

Role Conflict Studies of Female Athletes

Researchers have attempted to determine if female athletes experience a role conflict as a result of their sports participation. Studies of this kind have generally revealed that sports require traits associated with males. Research findings have also revealed that female athletes demonstrate traditional views toward the role of women in society.

In a study conducted by Kane (4:67), traits of male and female athletes were examined. Women athletes scored lower on emotional control, but scored similar to the men on traits of dominance, social aggression, leadership, and tough-mindedness.

Research conducted by Harris (6:32-36) revealed that personality traits of male and female athletes were more a-like than different. She also found that traits such as dominance and aggression, sometimes considered necessary for successful performance in competition, were not compatible with the female norms. In sports, female athletes saw themselves as having the same qualities observed in good male athletes. In a social situation, female athletes' self-

perceptions were not significantly different from females who were not athletes.

Snyder and Kivlin (21:23-29) conducted a study to examine the perceptions of the sex role among female athletes and non-athletes. Their findings indicated that women athletes viewed the women's role more traditionally than did the non-athletes.

Harris and Hall (7:151-152) conducted research to assess the masculinity traits associated with female team sport and individual sport participants. They concluded that team sport athletes were perceived as more masculine than individual sport athletes. Individual sport athletes, however, were perceived as more masculine than non-athletes.

A similar investigation was conducted by Sage and Loudermilk (18:88-96). They found that female athletes who participated in team sports experienced greater role conflict than those who participated in individual sports.

Personality Trait Studies of Athletes and Non-Athletes

Most researchers have concluded that some personality differences exist between female athletes and non-athletes. Specific differences have been inconsistent due to differences in evaluative instruments, samples, and statistics from study to study.

Kistler (20:65-90) conducted research to determine attitude differences between college athletes and non-

athletes. Athletes displayed poorer sportsmanship attitudes than non-athletes.

Schendel (23:92) examined male athletes and non-athletes at the high school and college levels. He found that high school athletes generally displayed more positive personal and social characteristics than non-athletes. At the college level, the conclusions were reversed.

Using the Sixteen Personality Factor Questionnaire, Malumphy (11:610-620) researched the personality of women athletes in intercollegiate competition and non-athletes. She found that non-participants differed significantly from athletes in three sports groups. Individual sport participants were more conscientious and tough-minded and possessed more tough poise and leadership than non-athletes. In comparison to team sport participants, non-athletes were more outgoing. Non-athletes were also more imaginative, extroverted, and venturesome in comparison to athletes who were both team and individual sport participants.

O'Connor and Webb (14:203-209) also utilized the Sixteen Personality Factor Questionnaire to examine the personality traits of college female athletes and non-athletes. They found that characteristics which are normally attributed to athletes described the non-athletes. Both groups were conscientious, aggressive, relaxed, artistic, and reserved.

Shafor (8:84-88) conducted research to determine personality trait differences in male high school subjects. His conclusions indicated a higher level of intelligence in team

sport participants than in non-athletes. He also noted that non-athletes were more sophisticated and self-sufficient than both team and individual sport participants.

Chadwick (8:84-88) reported contrasting results. He administered the Sixteen Personality Factor Questionnaire to female athletes and non-athletes. He discovered that non-athletes possessed more intelligence than athletes. He also found that athletes were significantly more tough-minded, practical, extroverted, group dependent, and subdued than non-athletes.

In a similar study, Rusch (8:84-88) examined the personality characteristics of female athletes and non-athletes. His research revealed that non-athletes were more happy-go-lucky and more tender-minded than athletes.

Whiting, Hardman, Hendry, and Jones (25:80-81) reviewed research to describe the personality traits associated with sport participation. The studies reviewed utilized the Sixteen Personality Factor Questionnaire. They found consistently high scores for athletes on traits of intelligence, dominance, enthusiasm, tension, jealousy, instability, shyness, and low super-ego strength.

Personality Trait Studies of Athletic Sub-Groups

Personality tests have been administered to different types of athletes. The fact that different trait characteristics exist between athletic sub-groups has been supported by most researchers.

Malumphy (11:610-620) conducted a study to compare the personality traits of women participating in intercollegiate sports competition. Team and individual sport participants were examined by using the Sixteen Personality Factor Questionnaire. Results indicated that individual sport athletes were less anxious, more venturesome, and demonstrated more leadership than team sport athletes.

Peterson, Weber, and Trousdale (16:324-328) examined the 1964 United States Olympic Teams composed of women athletes in individual and team sport events. When compared to the norms, they found that both sets of athletes were a little more serious than average, less free to express themselves, intellectually bright, conscientious, aggressive, persevering, and somewhat cool and aloof.

In a study designed to compare the personalities of sports groups, Moore (8:84-88) selected high school individual and team sport participants. Individual sport participants scored higher on ego strength, superego, coasthenia, and guilt proneness than team and combined sport performers.

A similar study conducted by Renneckar (8:84-88) also compared team sport groups with individual sport groups. He concluded that team sport participants were more aloof, serious, and free thinking than individual sport participants. Individual sport performers were characterized as warm, happy-go-lucky, and conservative.

Wilson (8:84-88) conducted research on team and individual sport performers but found opposing results. No

significant differences in personality traits were found to exist.

O'Connor and Webb (14:203-209) investigated the personality traits of college female athletes. Four groups were examined. The groups consisted of participants on basketball, gymnastics, tennis, and swimming teams. Significant differences were found to exist on factors of intelligence, radicalism, self-sufficiency, and control. The basketball group scored lower than the other groups on intelligence. Swimmers and tennis players were more apt to experiment than basketball players and gymnasts. Basketball players and swimmers were more self-sufficient and careless than tennis players and gymnasts.

Research by Ballinghoff (8:84-88) was conducted to determine personality trait differences in individual and team sport participants. He concluded that male athletes who participated in individual sports were more sensitive and effeminate than team sport performers.

Sage (17:335-358) conducted a study to assess the personality profiles of intercollegiate athletes from eight different sport groups. His study cast doubts on the existence of sport types. No significant differences were found to exist across the eight sport groups.

Personality Trait Studies and Athletic Experience

Very little research has been conducted to examine the possible effect of sports participation on the person-

ality of the athlete. Research findings have been inconsistent.

A study was conducted by Pitts and McClure (12:19-30) to determine the relationship between personality change and athletic experience. They concluded that physical activity may have evoked undesirable changes in the personality of the athlete. Anxiety was common among the athletes studied.

Research conducted by Ogilvie (12:19-30) illustrated more positive results. He concluded that competition either increased emotional stability, or the less emotionally stable were driven out of competition.

A similar conclusion was drawn by Morgan (12:19-30) concerning personality and athletic experience. His research indicated that sports did not cause stable mental health. Those with stable profiles gravitated toward sports.

Personality Trait Studies of Superior Athletes

Some researchers have had little success in differentiating champion from average athletes. Others have developed a personality profile of the superior athlete.

Johnson, Hutton, and Johnson (20:65-90) conducted a study to determine what characteristics described the champion. Results of their study indicated that the superior athlete displayed extreme aggression, uncontrollable emotions, high anxiety, high self-assurance, high levels of aspiration, and a strong need to achieve.

Gold (20:65-90), Ruhling (20:65-90), and Kroll (20:65-90) compared the personalities of athletes. Each researcher found no significant differences in the personality profile of average and champion athletes.

Olson (20:65-90) investigated the personality traits of the average and champion athletes. He concluded that champions were more inner-directed, pragmatic, and extroverted than athletes of average ability.

Ogilvie and Tutko (20:65-90) also differentiated champion from average athletes. They found that outstanding athletes displayed a high need to achieve, could resist the stress of competition, had great psychological endurance, and were self-confident and self-assertive.

By utilizing the California Psychological Inventory, Johnson (9:409-415) compared the personality traits of superior skilled women athletes in basketball, bowling, field hockey, and golf. The basketball group scored significantly lower than the other three groups on several traits. The basketball players were inhibited, somewhat shy and awkward, and socially and intellectually immature. Johnson concluded that these traits unique to the basketball players reflected the kind of dedication and sacrifice some superior skilled athletes may make.

Balazs and Nickerson (2:45-49) conducted a study to determine what causes the social driving forces behind outstanding achievement of a selected group of American sportswomen. The Edwards Personal Preference Schedule was used as

the testing device. Results of the study presented a picture of a person with two special personality-need areas: a high need for achievement, and a high need for autonomy.

Ogilvie (15:335-358) investigated the psychological consistencies within the personality of high-level competitors. He found that superior athletes, or those who retained their motivation for competition, displayed the following personality traits: ambition, organization, deference, dominance, endurance, and aggression.

Personality Trait Studies of Athletes on Different Teams

Research has indicated that athletes on winning and losing teams and on teams from different types of schools have different personality profiles.

Two studies were conducted by Kroll and Petersen (20:65-90) to support this statement. The personality profiles of college football players from "sister schools" revealed distinguishing personality traits of players on winning and losing teams. Winning teams scored lower on social values than losing teams. The personality profiles of college football players from various kinds of colleges were also examined. Kroll and Petersen concluded that state colleges, universities, and private schools attracted students with particular and unique profiles. Universities scored lowest on social values; state colleges next; and private schools highest.

Summary

The review of related literature has revealed considerable agreement that differences in personality characteristics do exist among athletes and non-athletes. Studies have also shown that factors such as self-concept, role conflict, athletic experience, and participation on different teams must be taken into consideration when evaluating personality profiles. Considerable disagreement among researchers exists concerning specific personality trait differences in athletes and non-athletes and in athletes engaging in different sports. There was little evidence of any consistent and predictable traits which most athletes who participated in a particular sport or sports area possessed as opposed to athletes in other sports or to non-athletes. Further research is necessary to determine if existing inconsistencies can be eliminated.

Chapter 3

METHODOLOGY

This study has been designed to examine and compare the personality traits of female college athletes and non-athletes based on the results of the Sixteen Personality Factor Questionnaire. Information presented in this chapter has been organized to provide descriptions of subjects, the personality questionnaire, testing procedures, and the statistical tools used in the study.

Subjects

Thirty-five female undergraduate students from John Brown University in Siloam Springs, Arkansas were selected as subjects for the study. Each student completed a personal information questionnaire regarding age, year in school, and academic major. Results of the questionnaire have been presented in Appendix A.

Twenty-eight of the subjects comprised the University's varsity intercollegiate athletic teams and were participating in their particular sport at the time of the study. Sports groups which were represented consisted of volleyball basketball, softball, and tennis. Each group was composed of seven members. All subjects in the sports groups had competed at the high school level and were completing at least

one year of intercollegiate athletic competition in the sport in which they were tested. Seventeen athletes were education majors with eleven of those seventeen studying physical education.

The non-athletic group consisted of seven female volunteers from general education classes who had never competed on any organized athletic team and who were non-physical education majors. Four subjects, however, were majoring in education. The non-athletic subjects were chosen at random from twenty-six volunteers.

Of the thirty-five subjects, sixteen were freshmen, four were sophomores, ten were juniors, and five were seniors. Their ages ranged from 18 to 22 years with a mean age of 19.6 years.

The Personality Test

The Sixteen Personality Factor Questionnaire (16 PF test) was developed by Raymond B. Cattell at the University of Illinois, Champaign. This personality type test, used to objectively measure the traits of the subjects, was selected because of its conciseness, scoring ease, availability, and its validity in the past./ The items in the test have become the survivors from several thousands of items originally tried, and have constituted only those which continue to have significant validity against the factors after ten successive factor analyses on different samples. These analyses have both verified the existence and natural structure of the

sixteen factors, and cross-validated the test items in their correlation with the factors on different adult population samples.

Cattell (3:11-12) stated that the validity of the 16 PF test was meant to be a concept validity because the test questions were chosen as being good measures of the personality factors. Concept validity has been evaluated directly by correlating the scale score with the pure factor it was designed to measure. Concept validity has also been evaluated by determining how well the test scale's correlations with a representative sample of diverse psychological variables agree with those the conceptual criterion is expected to have. Direct and indirect estimates of validity have agreed quite well. Both approaches placed factors A and F among the highest, and factors M, N, O, and Q_1 among the lowest. Direct and indirect concept validities have been included in Appendix D.

Included in the questionnaire were the following sixteen factors: (A) reserved vs out-going; (B) less intelligent vs more intelligent; (C) low ego strength vs high ego strength; (E) humble vs assertive; (F) sober vs happy-go-lucky; (G) expedient vs conscientious; (H) shy vs venturesome; (I) tough-minded vs tender-minded; (L) trusting vs suspicious; (M) practical vs imaginative; (N) forthright vs shrewd; (O) self-assured vs apprehensive; (Q_1) conservative vs experimenting; (Q_2) group dependent vs self-sufficient;

(Q_3) undisciplined self-conflict vs controlled; and (Q_4) relaxed vs tense.

Form A of the 16 PF test, consisting of 187 questions, was used in the study. The questions provided 10 to 13 discriminatory items for each of the sixteen personality factors.

Testing Procedures

The Sixteen Personality Factor Questionnaire was administered to the athletes during their season of competition and to the non-athletes in the Spring. A classroom for testing was provided. All subjects were instructed to remain silent during the test, to take the test in a serious manner, and to complete the test with no assistance. The subjects were also instructed to choose from three alternative answers to each question. They were to respond by marking the corresponding letter of the correct answer on an answer sheet. The test required from 45 to 60 minutes to complete. After completing the test, each subject returned the materials to the tester.

Statistical Procedures

Following Cattell's recommendation, raw test scores were used for statistical analyses. Form A answer sheets were hand scored by the investigator using the respective scoring keys provided with the test. Results were then totaled and values for the sixteen traits assigned to each subject.

The IBM 370 Computer at Eastern Illinois University was used to calculate the mean scores, standard deviations, and the analysis variance to compare the groups on the personality variables. The .05 level of confidence was selected to determine whether the groups differed significantly.

The mean scores were converted to sten scores which were distributed over ten equal-interval standard score points. Sten scores were numbered from 1 through 10, with the population average fixed at sten 5.5. These sten scores were also observed for profile analysis.

Chapter 4

ANALYSIS OF THE DATA

The investigation was designed to provide a comparison of the personality traits of female athletes in selected sports and non-athletes as measured by the Sixteen Personality Factor Questionnaire (16 PF test). Thirty-five female students from John Brown University were chosen as subjects for the study. Form A of the 16 PF test was administered to the subjects. A presentation of the findings and a discussion of the data have been included in this chapter.

Presentation of the Findings

The presentation of the findings has been divided into two parts. The mean sten scores for the volleyball, basketball, softball, tennis, and non-athletic groups on the 16 PF test have been treated first. A comparison of the groups on each personality trait was then completed.

Analysis of Mean Sten Scores for the Five Groups on the 16 PF Test

The mean scores for the volleyball, basketball, softball, tennis, and non-athletic groups were converted to mean sten scores to compare the results of the 16 PF test to a standard population of female college students. In relation

to the norm, Cattell has treated mean sten scores of 5 and 6 as average; 4 and 7 as slightly deviant; 2, 3, 8, and 9 as strongly deviant; and 1 and 10 as extreme.

As shown in Tables 1 through 5 and Figures 1 through 5, the groups obtained average scores in comparison to the norms on many factors. All of the groups scored average on traits of ego strength (Factor C), suspiciousness (Factor L), and self-sufficiency (Factor Q_2). The athletic groups scored similarly to the norms on aggressiveness (Factor E), shrewdness (Factor N), experimentalism (Factor Q_1), and emotional control (Factor Q_3). The volleyball, softball, tennis, and non-athletic groups obtained average scores on traits of imaginativeness (Factor M) and tenseness (Factor Q_2). Basketball and tennis players scored similarly to the norm on the trait of sociability (Factor A), while volleyball and tennis players scored average on intelligence (Factor B). On the trait of surgency (Factor F), the volleyball, basketball, softball, and non-athletic groups obtained similar scores to the norm. Volleyball, softball, and tennis players compared similarly to the norm on conscientiousness (Factor G), while only the softball and tennis players scored similarly on sensitivity (Factor 1). Volleyball, basketball, and softball players were found to be average in adventurousness (Factor H). On the trait of apprehensiveness (Factor O), the basketball, softball, tennis, and non-athletic groups scored similarly to the norm.

Table 1

Mean Scores, Standard Deviations, and, Mean Sten Scores for Female Volleyball Players on the 16 PF Test

Profile Component	Mean	Standard Deviation	Mean Sten Score
Sociability (A)	10.14	5.01	4
Intelligence (B)	8.86	1.77	6
Ego Strength (C)	13.86	4.95	5
Aggressiveness (E)	10.29	3.82	5
Surgency (F)	16.86	4.45	6
Conscientiousness (G)	10.71	2.69	5
Adventurousness (H)	13.00	6.38	5
Sensitivity (I)	12.14	3.08	4
Suspiciousness (L)	7.43	2.76	5
Imaginativeness (M)	10.57	2.70	5
Shrewdness (N)	9.00	3.06	6
Apprehensiveness (O)	15.14	3.85	8
Experimentalism (Q_1)	5.71	2.93	5
Self-Sufficiency (Q_2)	9.57	4.76	6
Emotional Control (Q_3)	9.57	5.29	5
Tenseness (Q_4)	15.00	5.26	6

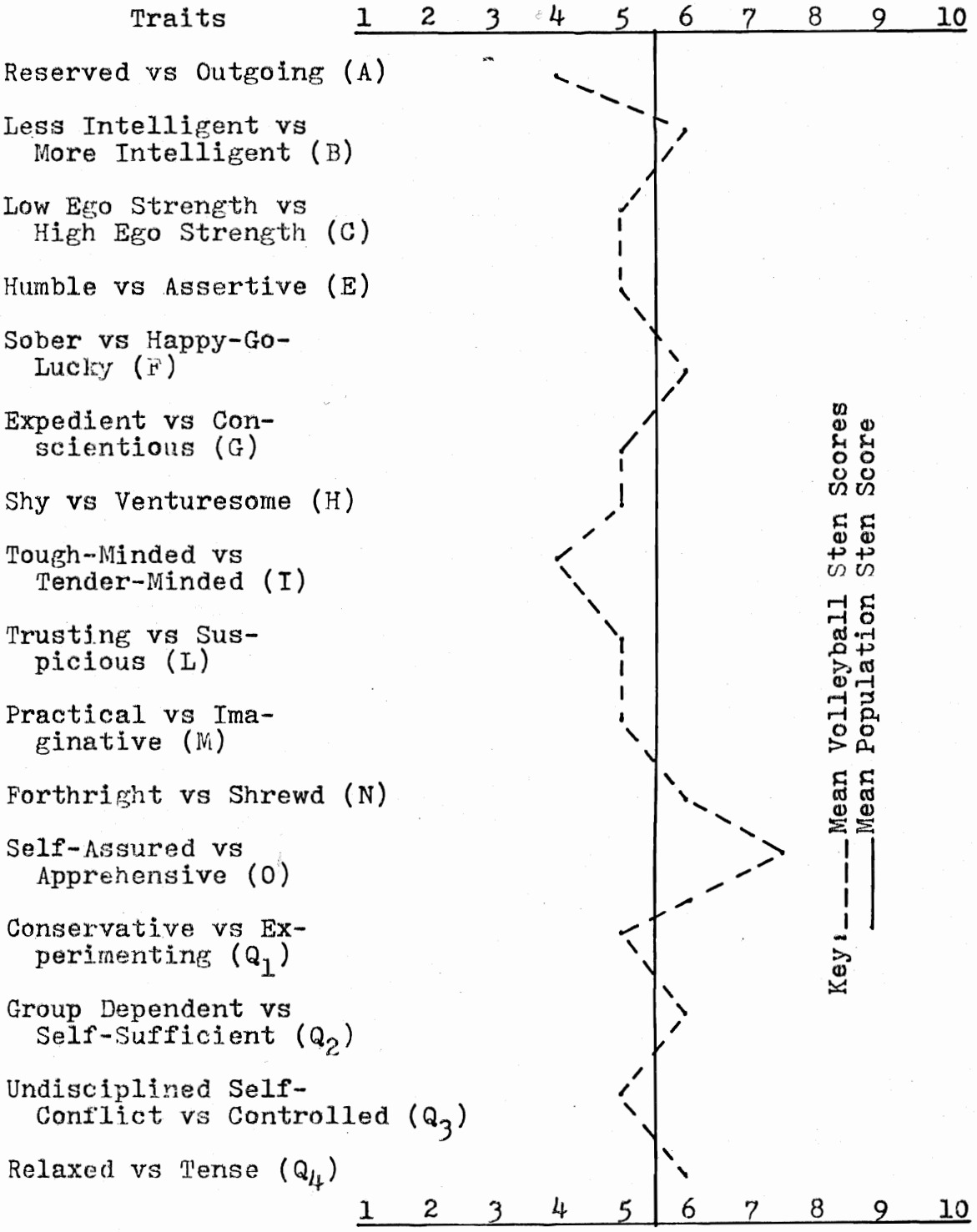

Figure 1

Profile of Mean Sten Scores For Seven Female Volleyball Players on the 16 PF Test

Table 2.

Mean Scores, Standard Deviations, and Mean Sten Scores for Female Basketball Players on the 16 PF Test

Profile Component	Mean	Standard Deviation	Mean Sten Score
Sociability (A)	12.43	1.99	6
Intelligence (B)	7.29	1.60	4
Ego Strength (C)	15.00	1.83	5
Aggressiveness (E)	9.57	3.41	5
Surgency (F)	16.43	4.61	5
Conscientiousness (G)	13.71	3.59	7
Adventurousness (H)	11.29	4.82	5
Sensitivity (I)	12.00	2.31	4
Suspiciousness (L)	8.71	3.90	6
Imaginativeness (M)	8.43	2.51	3
Shrewdness (N)	9.29	1.89	6
Apprehensiveness (O)	12.14	3.80	6
Experimentalism (Q_1)	6.57	1.27	5
Self-Sufficiency (Q_2)	8.71	2.75	5
Emotional Control (Q_3)	12.00	2.58	6
Tenseness (Q_4)	16.71	2.29	7

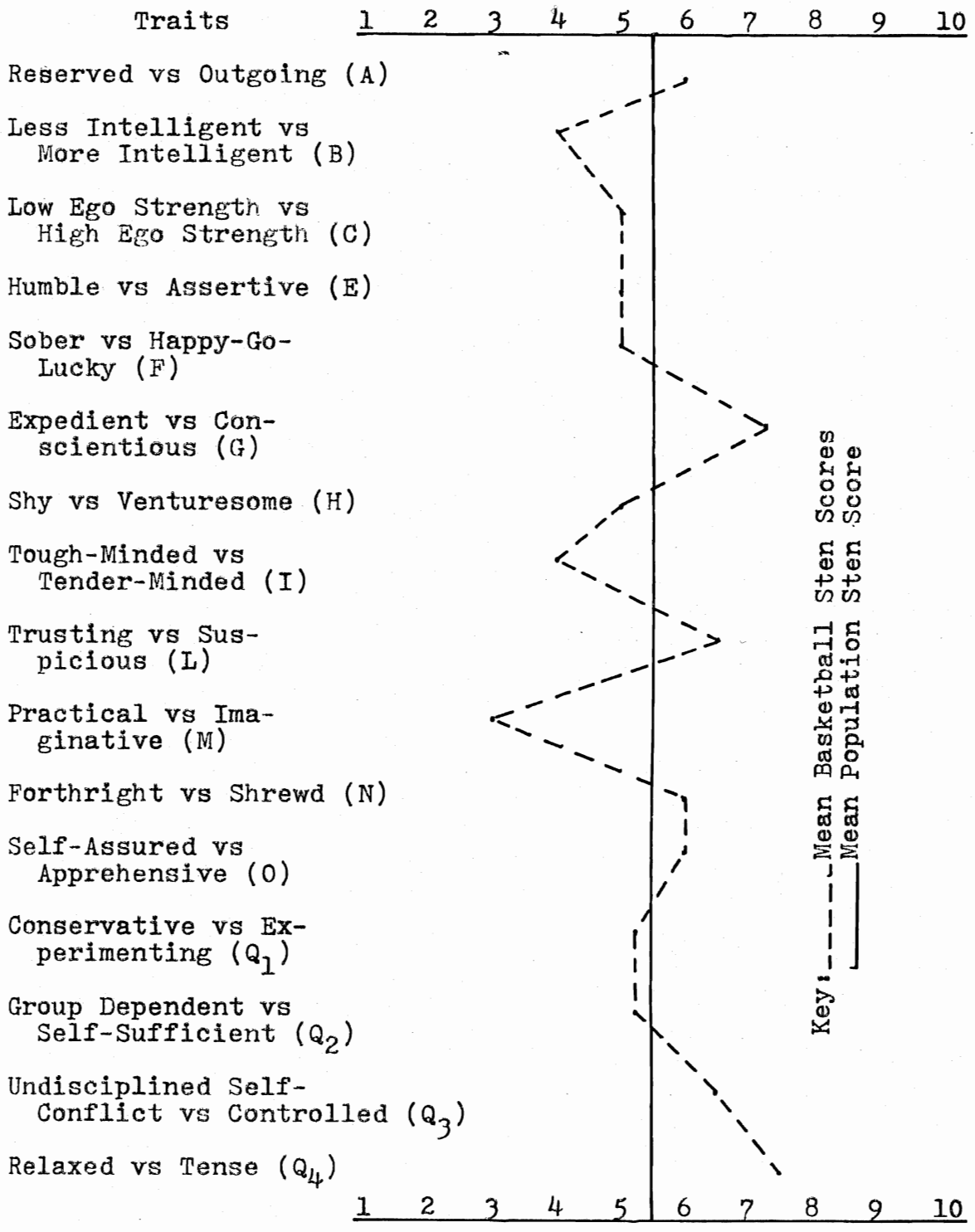

Figure 2

Profile of Mean Sten Scores for Seven Female Basketball Players on the 16 PF Test

Table 3

Mean Scores, Standard Deviations, and Mean Sten Scores for Female Softball Players on the 16 PF Test

Profile Component	Mean	Standard Deviation	Mean Sten Score
Sociability (A)	10.14	3.08	4
Intelligence (B)	7.14	2.04	4
Ego Strength (C)	15.43	5.13	5
Aggressiveness (E)	9.71	5.82	5
Surgency (F)	17.71	5.25	6
Conscientiousness (G)	11.14	3.48	5
Adventurousness (H)	12.71	7.59	5
Sensitivity (I)	12.57	3.46	5
Suspiciousness (L)	7.71	2.06	6
Imaginativeness (M)	11.00	2.31	5
Shrewdness (N)	10.00	2.31	6
Apprehensiveness (O)	10.29	3.68	5
Experimentalism (Q_1)	8.29	3.86	6
Self-Sufficiency (Q_2)	10.86	3.67	6
Emotional Control (Q_3)	10.43	2.07	5
Tenseness (Q_4)	12.57	7.63	5

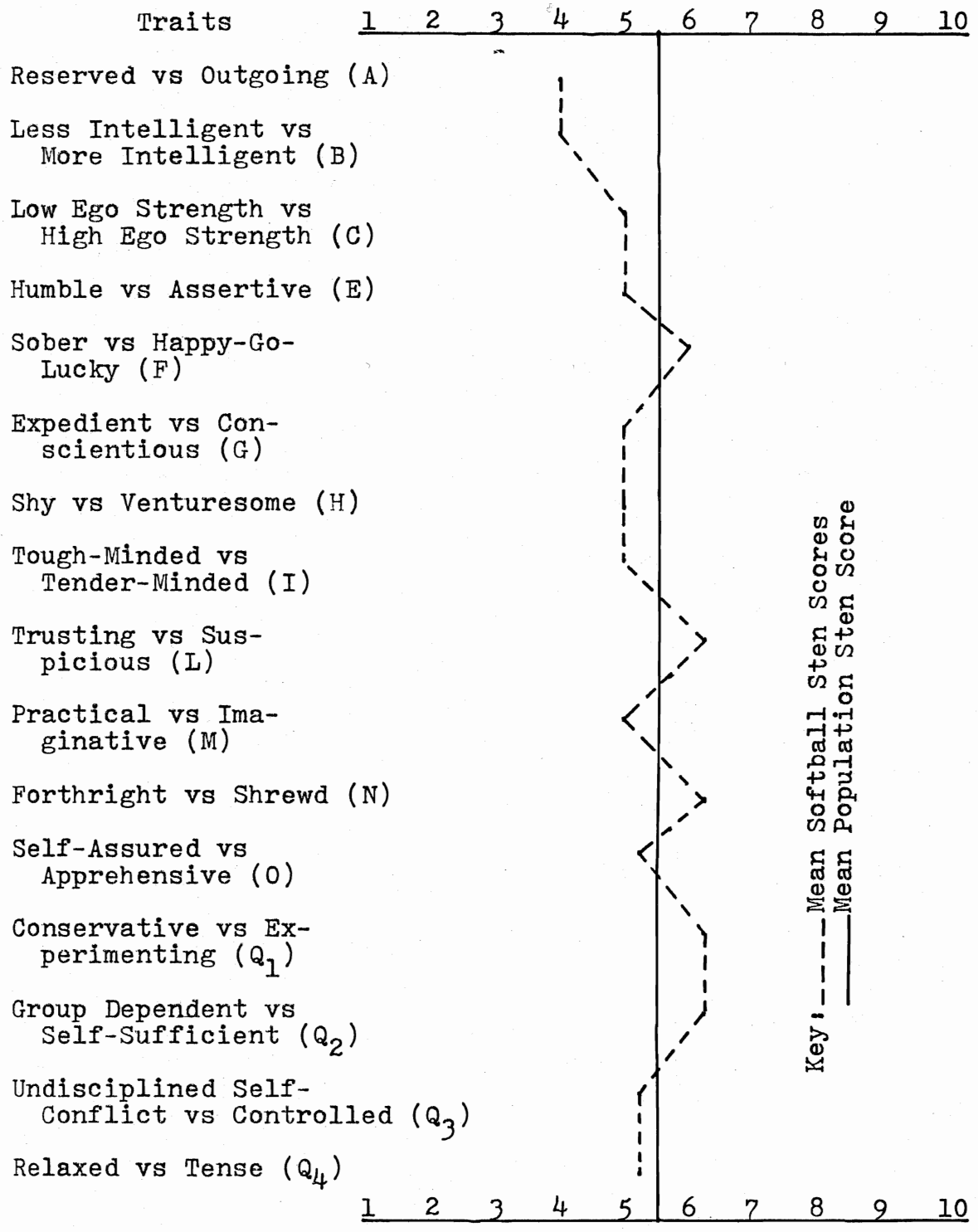

Figure 3

Profile of Mean Sten Scores for Seven Female Softball Players on the 16 PF Test

Table 4

Mean Scores, Standard Deviations, and Mean Sten Scores for Female Tennis Players on the 16 PF Test

Profile Component	Mean	Standard Deviation	Mean Sten Score
Sociability (A)	11.29	5.02	5
Intelligence (B)	8.29	1.80	5
Ego Strength (C)	16.86	2.04	6
Aggressiveness (E)	10.71	3.40	5
Surgency (F)	20.57	6.55	8
Conscientiousness (G)	11.71	5.22	6
Adventurousness (H)	16.57	7.18	7
Sensitivity (I)	13.57	3.36	6
Suspiciousness (L)	7.71	3.95	6
Imaginativeness (M)	12.14	5.01	5
Shrewdness (N)	8.29	2.06	5
Apprehensiveness (O)	10.71	3.30	6
Experimentalism (Q_1)	5.57	3.74	5
Self-Sufficiency (Q_2)	8.71	3.45	5
Emotional Control (Q_3)	11.43	4.31	5
Tenseness (Q_4)	12.57	3.82	5

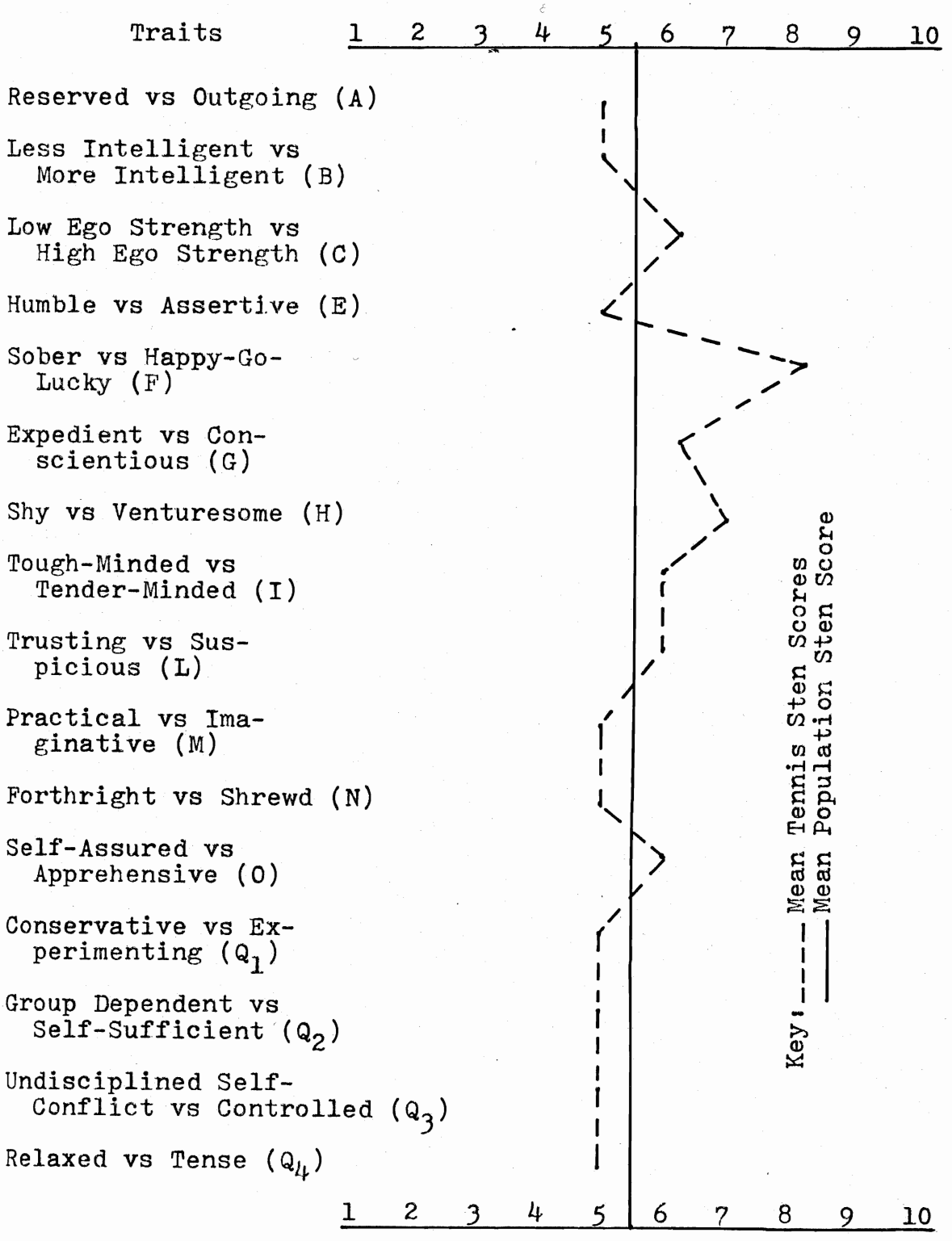

Figure 4

Profile of Mean Sten Scores for Seven Female Tennis Players on the 16 PF Test

Table 5

Mean Scores, Standard Deviations, and Mean Sten Scores for Female Non-Athletes on the 16 PF Test

Profile Component	Mean	Standard Deviation	Mean Sten Score
Sociability (A)	10.00	4.65	4
Intelligence (B)	9.71	1.80	7
Ego Strength (C)	16.29	3.20	6
Aggressiveness(E)	8.14	4.53	4
Surgency (F)	15.29	4.23	5
Conscientiousness (G)	14.71	2.43	7
Adventurousness (H)	10.43	6.48	4
Sensitivity (I)	15.57	3.05	7
Suspiciousness (L)	7.71	2.50	6
Imaginativeness (M)	11.86	5.67	5
Shrewdness (N)	10.86	2.54	7
Apprehensiveness (O)	11.14	2.73	6
Experimentalism (Q_1)	4.14	2.27	3
Self-Sufficiency (Q_2)	9.71	3.55	6
Emotional Control (Q_3)	13.86	2.48	7
Tenseness (Q_4)	13.00	2.38	5

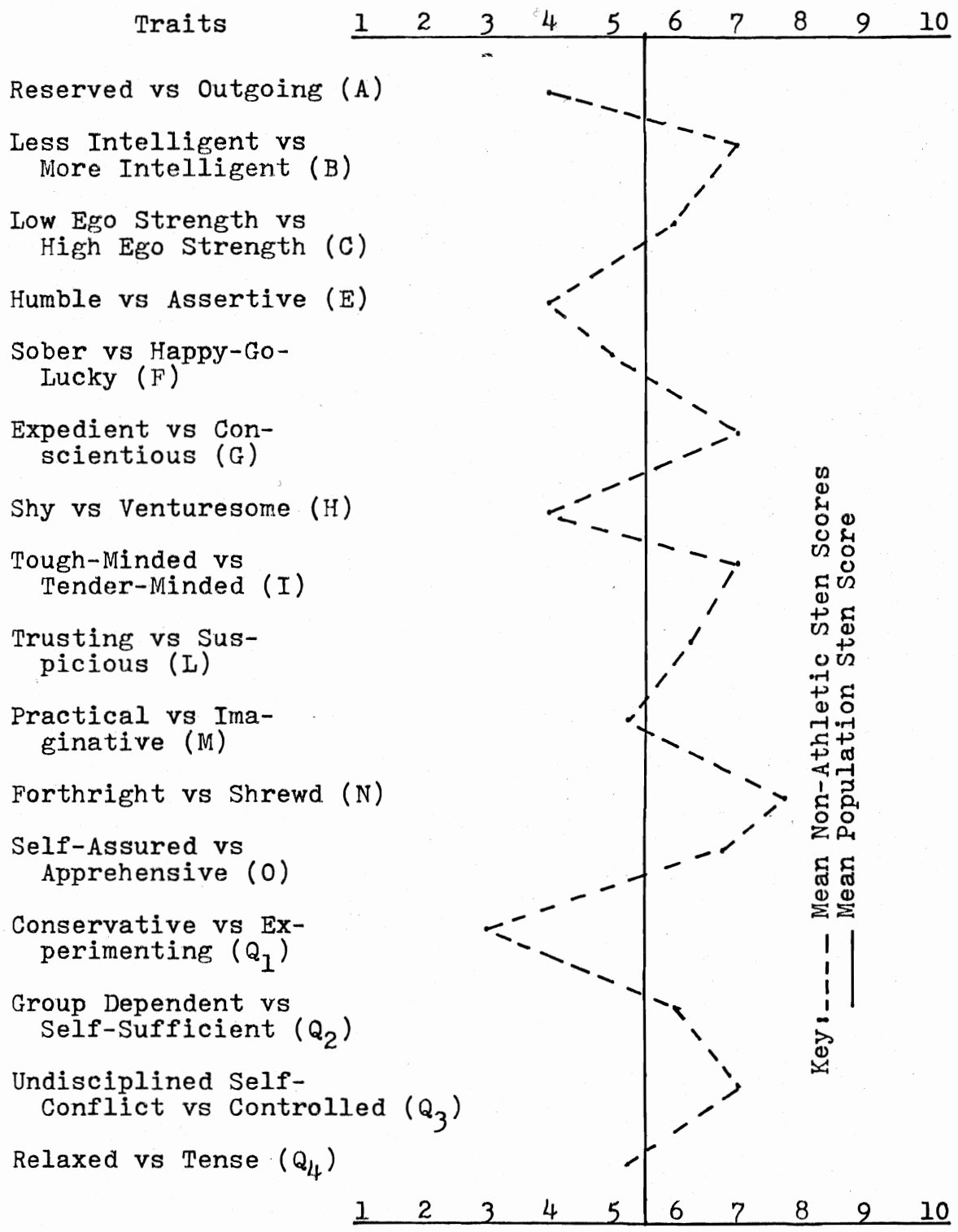

Figure 5

Profile of Mean Sten Scores for Seven Female Non-Athletes on the 16 PF Test

The mean sten scores for female volleyball players, presented in Table 1, have also been illustrated in Figure 1. Volleyball players scored slightly lower than the norms on traits of sociability (Factor A) and sensitivity (Factor I) and were characterized as slightly reserved and tough-minded. The volleyball group strongly deviated from the norm on the trait of apprehension (Factor O). The high score obtained on this factor has indicated a tendency to be more guilt prone and troubled than Cattell's standard population of female college students.

Table 2 and Figure 2 have presented mean sten scores for the seven basketball players. Slight deviations from the norms have been noted on several traits. Basketball players demonstrated more conscientiousness (Factor G) and tough-mindedness (Factor I) but less intelligence (Factor B) than Cattell's standard population of female college students. Basketball players scored substantially lower than the norm on the trait of imaginativeness (Factor M). Subjects scoring low on this factor have been described as practical, careful, and conventional.

Softball players, as shown in Table 3 and Figure 3, were slightly more reserved (Factor A) and less intelligent (Factor B) than the norms. No strong deviations were recorded.

Table 4 and Figure 4 have presented mean sten scores for the tennis group. According to these scores, tennis

players were slightly more venturesome (Factor H) than Cattell's standard population. Tennis players were also found to be considerably more happy-go-lucky, impulsively lively, and enthusiastic (Factor F) in relation to the norm.

Mean sten scores for the non-athletic group have been included in Table 5 and illustrated in Figure 5. In comparison to the norm, non-athletes were characterized as slightly more reserved (Factor A), intelligent (Factor B), humble (Factor E), conscientious (Factor G), shy (Factor H), tender-minded (Factor I), shrewd (Factor N), and emotionally controlled (Factor Q_3). Non-athletes were also found to be strongly conservative (Factor Q_1). This trait has indicated a tendency to respect established ideas and to accept the "tried and true."

When the mean scores of the groups were combined and converted to mean sten scores, the athletes and non-athletes scored average on all of the sixteen personality traits in relation to the defined population on which the standardization was based.

One-Way Analysis of Variance for the Five Groups on the 16 PF Test

The results of the one-way analysis of variance of the 16 PF test administered to participants in volleyball, basketball, softball, and tennis, and selected non-athletes at John Brown University have been presented in Table 6. When the five groups were compared at the .05 level of confidence, no significant differences were found to exist among the follow-

Table 6

Results of One-Way Analysis of Variance for Volleyball, Basketball, Softball, Tennis, and Non-Athletic Groups on the 16 PF Test

Factor	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F Ratio
A	Between	4	30.743	7.686	.450
Sociability	Within	30	512.857	17.095	
B	Between	4	32.686	8.171	2.501
Intelligence	Within	30	98.000	3.267	
C	Between	4	37.886	9.471	.692
Ego Strength	Within	30	410.857	13.695	
E	Between	4	26.686	6.671	.362
Aggressiveness	Within	30	552.857	18.429	
F	Between	4	111.029	27.757	1.072
Surgency	Within	30	777.143	25.905	
G	Between	4	83.829	20.957	1.602
Conscientiousness	Within	30	392.571	13.086	
H	Between	4	155.314	38.829	.903
Adventurousness	Within	30	1290.286	43.010	
I	Between	4	60.971	15.243	1.610
Sensitivity	Within	30	284.000	9.467	
L	Between	4	6.857	1.714	.175
Suspiciousness	Within	30	293.429	9.781	

Table 6 (continued)

Factor	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squares	F Ratio
M Imaginativeness	Between	4	60.457	15.114	.992
	Within	30	457.143	15.238	
N Shrewdness	Between	4	27.029	6.757	1.167
	Within	30	173.714	5.790	
O Apprehensiveness	Between	4	106.114	26.529	2.166
	Within	30	367.429	12.248	
Q_1 Experimentalism	Between	4	64.743	16.186	1.831
	Within	30	265.143	8.838	
Q_2 Self-Sufficiency	Between	4	21.886	5.471	.401
	Within	30	408.857	13.629	
Q_3 Emotional Control	Between	4	74.686	18.671	1.466
	Within	30	382.000	12.733	
Q_4 Tenseness	Between	4	94.114	23.529	1.055
	Within	30	668.857	22.295	

F ratio needed for .05 level of significance with four and thirty degrees of freedom was 2.69

ing sixteen traits: sociability (Factor A), intelligence (Factor B), ego strength (Factor C), aggressiveness (Factor E), surgency (Factor F), conscientiousness (Factor G), adventurousness (Factor H), sensitivity (Factor I), suspiciousness (Factor L), imaginativeness (Factor M), shrewdness (Factor N), apprehensiveness (Factor O), experimentalism (Factor Q_1), self-sufficiency (Factor Q_2), emotional control (Factor Q_3), and tenseness (Factor Q_4).

Intelligence (Factor B), and apprehensiveness (Factor O), were the only traits with mean scores that varied greatly among the groups. The mean scores for intelligence and apprehensiveness by groups were as follows:

	Intelligence	Apprehensiveness
Volleyball	8.86	15.14
Basketball	7.29	12.14
Softball	7.14	10.29
Tennis	8.29	10.71
Non-Athletes	9.71	11.14

An F score of 2.69 was needed at the .05 level of confidence to establish a significant difference. The traits intelligence and apprehensiveness on the 16 PF test, had F ratios of 2.501 and 2.166 respectively. These represented the highest F scores among all the comparisons. Although they were not significant, the non-athletes established the highest mean score on the intelligence factor followed by the volleyball, tennis, basketball, and softball groups.

The volleyball group had the highest mean score on apprehensiveness followed by the basketball, non-athletic, tennis, and softball groups.

Discussion of the Data

The results of this study, for the most part, did not agree with the conclusions of a number of similar investigations reviewed. Comparison of other personality trait studies of athletes and non-athletes and comparison of personality trait studies of athletic sub-groups have been included in the discussion of data.

Comparison of Personality Trait Studies of Athletes and Non-Athletes

Malumphy (11:610-620), using the Sixteen Personality Factor Questionnaire, found that athletes were more conscientious than non-athletes, and some athletes were found to be more relaxed, artistic, and reserved than non-athletes. These characteristics have been normally attributed to athletes but were not found to significantly differentiate the athletes from the non-athletes in the present study.

Chadwick (8: 84-88) characterized athletes as more tough-minded, practical, extroverted, group dependent, and subdued than non-athletes. Rusch (8: 84-88) concluded that non-athletes were more happy-go-lucky and tender-minded than athletes. None of these findings have been supported by the present investigation.

O'Conner and Webb (14:203-209) utilized the Cattell Sixteen Personality Factor Questionnaire and found that athletes and non-athletes were similar on thirteen personality factors. They scored significantly different on traits of experimentalism, self-sufficiency, and emotional control. Except for these three factors, comparable results were recorded in the present study.

Comparison of Personality Trait Studies of Athletic Sub-Groups

Renneckar (8:84-88) found that team sport participants could be characterized as aloof, serious, and free thinking. Individual sport participants were warm, happy-go-lucky, and conservative. The current study revealed inconsistencies on these traits as no significant differences were found to exist among athletic sub-groups.

Whiting, Hardman, Hendry, and Jones (25:80-81) reviewed studies utilizing Cattell's 16 PF test and found that athletes scored significantly higher on traits of intelligence, dominance, enthusiasm, tension, jealousy, instability, shyness, and low ego strength. John Brown University female athletes scored near the average on each of these traits, although tennis players had a tendency to be more enthusiastic.

Wilson (8:84-88) reported no significant differences between team and individual sport participants on 70% of the personality traits examined. Of 120 traits tested, only 35 differences were recorded.

Chapter 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The investigation was designed to describe the personality profiles of female college athletes and non-athletes as measured by the Sixteen Personality Factor Questionnaire.

Thirty-five students from John Brown University in Siloam Springs, Arkansas were subjects in the study. Twenty-eight of the subjects were members of the University's intercollegiate athletic teams. Sport groups which were represented consisted of volleyball, basketball, softball, and tennis. Seven members comprised each group. The non-athletic group was made up of seven female students who had never competed in athletics and who were non-physical education majors. The ages of the subjects ranged from 18 to 22 years.

Form A of the Sixteen Personality Factor Questionnaire, as well as a personal information survey, were administered to all subjects. Following Cattell's recommendations, raw test scores were used for statistical analysis. Form A answer sheets were hand scored twice by the investigator using the respective scoring keys provided with the tests. Results were then totaled and values for the sixteen traits assigned to each subject.

An IBM 370 Computer at Eastern Illinois University

was used to calculate the mean scores, standard deviations, and the one-way analysis of variance of the groups. The .05 level of confidence was selected to determine the significance of the comparisons.

The mean scores were converted to standard ten scores (stens) in relation to the norms for female college students. These sten scores were also observed for profile analysis.

Conclusions

The following conclusions relative to the present study have been made based on the acceptance of the null hypothesis:

1. The personality profiles of John Brown University female athletes and female non-athletes are very similar.

2. John Brown University female athletes possess similar personality traits regardless of the sport in which they participate.

Recommendations

Based on the findings of the study, the following recommendations have appeared warranted:

1. A similar study should be made to describe the personality traits of female athletes from several university campuses.

2. A similar investigation should be conducted to describe the personality profiles of high school female athletes.

3. Further research should utilize other personality instruments such as the Adjective Checklist (ACL) and the Minnesota Multi-phasic Personality Inventory (MMPI).

4. Further research should be directed toward determining the relationship between personality traits and performance.

5. Further studies should be conducted on larger groups.

REFERENCES

REFERENCES

1. Alderman, R. B. Psychological Behavior in Sport. Philadelphia: W. B. Saunders Company, 1974, p. 110.

2. Balazs, Eva, and Nickerson, Eileen. A Personality Needs Profile of Some Outstanding Female Athletes. Journal of Clinical Psychology, January, 1976, 32, 45-49.

3. Cattell, Raymond B. Manual for the 16 PF. Champaign, Illinois: Institute for Personality and Ability Testing, 1972, Pp. 11-12.

4. Dickinson, John. A Behavioral Analysis of Sport. Princeton, New Jersey: Princeton Book Company, 1977, p. 67.

   _____ 1972, citing Kane (Psychological Aspects of Physical Education and Sport. London: Routledge and Kegan Paul.)

5. Frost, Reuban B. Psychological Concepts Applied to Physical Education and Coaching. Reading, Massachusetts: Addison-Wesley Publishing Co., 1971, Pp. 169-171.

6. Harris, Dorothy V. Research Studies on the Female Athlete: Psychosocial Considerations. Journal of Physical Education and Recreation, January, 1975, 46, 32-36.

7. Harris, Mary B. and Hall, Cathy. Sex Stereotypes and Ratings of Athletes. Journal of Social Psychology, June, 1978, 105, 151-152.

8. Harrison, Peggy, and Jones, Billie J. Research and Women in Sports: Closing the Gap. Physical Educator, May, 1975, 32, 84-88.

   _____ 1970, citing Moore (Personality Variables Between Selected Female High School Interscholastic Sports Participants, unpublished master's thesis, Springfield College.)

   _____ 1970, citing Renneckar (Personality Traits of Selected Women Intercollegiate Athletes, unpublished master's thesis, Illinois State.)

———— 1971, citing Shafor (Personality Trait Differences Between High-School Female Athletes in Team and Individual Sports, unpublished master's thesis, Long Beach State College.)

———— 1971, citing Wilson (Completed Research in Health, Physical Education, and Recreation. Volumes 12-15, Washington D. C.: American Alliance for Health, Physical Education, and Recreation.)

———— 1972, citing Ballinghoff (A Comparison of Selected Personality Factors of Female Secondary School Varsity Sports Participants, unpublished master's thesis, Mankato State College.)

———— 1972, citing Chadwick (A Comparison of the Personality Traits and Kinesthetic Augmentation and Reduction of College Female Athletes and Non-Athletes, unpublished dissertation, Florida State University.)

———— 1972, citing Rusch (Personality Traits and Sports Participation of Adult Women, unpublished master's thesis, University of Texas.)

9. Johnson, Patricia Ann. A Comparison of Personality Traits of Superior Skilled Women Athletes in Basketball, Bowling, Field Hockey, and Golf. Research Quarterly, December, 1972, 43, 409-415.

10. Kukla, Kenneth J., and Pargman, David. Comparative Perceptions of Psychological Well-Being as Influenced by Sport Experience in Female Athletes. Research Quarterly, October, 1976, 42, 375-380.

11. Malumphy, Theresa M. Personality of Women Athletes in Intercollegiate Competition. Research Quarterly, October, 1968, 39, 610-620.

12. Miller, Donna Mae. Coaching the Female Athlete. Philadelphia: Lea and Febiger, 1974, Pp. 19-30.

———— 1967, citing Ogilvie (What is an Athlete? Journal of Health, Physical Education and Recreation, p. 48.)

———— 1967, citing, Pitts and McClure (Lactate Metabolism in Anxiety Neurosis. New England Journal of Medicine. 277, 1329-1336.)

———— 1971, citing Morgan (Psychomotor Domain: Movement Behaviors. Robert N. Singer Ed. Philadelphia: Lea & Febiger.)

13. Neal, Patsy E., and Tutko, Thomas A. Coaching Girls and Women: Psychological Perspectives. Boston: Allyn and Bacon, Inc., 1975, p. 160.

14. O'Connor, Kathleen A., and Webb, James L. Investigation of Personality Traits of College Female Athletes and Non-Athletes. Research Quarterly, 1976, 47, 203-209.

15. Ogilvie, Bruce C. Psychological Consistencies Within the Personality of High-Level Competitors. In A. Craig Fisher Ed., Psychology of Sport. Mayfield Publishing Company, 1976, Pp. 335-358.

16. Peterson, Sheri L., Weber, Jerome C., and Trousdale, William W. Personality Traits of Women in Team Sports vs. Individual Sports. In William P. Morgan Ed., Contemporary Readings in Sport Psychology. Springfield, Illinois: Charles C. Thomas Publisher, 1970, Pp. 324-328.

17. Sage, George H. An Assessment of Personality Profiles Between and Within Intercollegiate Athletics from Eight Different Sports. In A. Craig Fisher Ed., Psychology of Sport. Mayfield Publishing Company, 1976, Pp. 335-358.

18. Sage, George H., and Loudermilk, Sheryl. The Female Athlete and Role Conflict. Research Quarterly, March, 1979, 50, 88-96.

19. Schultz, Bruce W. Self-Concepts in Athletics. Athletic Journal, February, 1977, 57, 60, 80-82.

20. Singer, Robert N. Coaching, Athletics, and Psychology. New York: NcGraw-Hill, 1972, Pp. 65-90.

_____ 1954, citing Johnson, Hutton, and Johnson (Personality Traits of Some Champion Athletes as Measured by Two Projective Tests: the Rorschach and H-T-P. Research Quarterly, 25, 484-485.)

_____ 1955, citing Gold (A Comparison of Personality Characteristics of Professional and College Varsity Tennis and Golf Players as Measured by the Guilford-Martin Personality Inventory, unpublished master's thesis, University of Maryland.)

_____ 1957, citing Kistler (Attitudes Expressed About Behavior Demonstrated in Certain Specific Situations Occuring in Sports. Proceedings of the National College Physical Education Association for Men, 50, 55-58.)

_____ 1965, citing Kroll and Petersen (Study of Values Test and Collegiate Football Teams. Research Quarterly, 36, 441-447.)

_____ 1966, citing Olson (Identification of Personality Differences Among Male Tennis Players, unpublished doctoral dissertation, Ohio State University.)

_____ 1966, citing Ruhling (A Comparative Study of Introversion & Extroversion in Selected Varsity and Intramural Athletes Using the Composite MMPI Introversion and Extroversion Scale, unpublished master's thesis, University of Maryland.)

_____ 1967, citing Kroll (Sixteen Personality Factor Profiles of Collegiate Wrestlers. Research Quarterly, 38, 49-56.)

_____ 1967, citing Ogilvie and Tutko (When is Pain Real? unpublished dittoed paper, San Jose State University.)

21. Snyder, Eldon E., and Kivlin, Joseph E. Perceptions of the Sex Role Among Female Athletes and Non-Athletes. Adolescence, Spring, 1977, 12, 23-29.

22. Snyder, Eldon E., and Kivlin, Joseph E. Women Athletes and Aspects of Psychological Well-Being and Body Image. Research Quarterly, May, 1975, 46, 191-199.

23. Snyder, Eldon, E., and Spreitzer, Elmer, Social Aspects of Sport. New Jersey: Prentice-Hall Inc., 1978, p. 92.

_____ 1965, citing Schendel (Psychological Differences Between Athletes and Non-Participants in Athletics at Three Educational Levels. Research Quarterly, 36, 32-67.)

24. Vincent, Marilyn. Comparison of Self-Concepts of College Women: Athletes and Physical Education Majors. Research Quarterly, May, 1976, 47, 218-225.

25. Whiting, H.T.A., Hardman, K., Hendry, L.B., and Jones, M.G. Personality & Performance in Physical Education & Sport. London: Henry Kimpton Publishers, 1973, Pp. 80-81.

APPENDIXES

APPENDIX A

Results of the Personal Information Questionnaire for Each Subject

Group	Subject	Age	Year in School	Academic Major
Volleyball	1	18	Freshman	Phys. Ed.
	2	18	Freshman	Phys. Ed.
	3	18	Freshman	Pre-Nursing
	4	18	Freshman	Elem. Ed.
	5	19	Freshman	Biology
	6	19	Sophomore	Elem. Ed.
	7	20	Junior	Bus. Admin.
Basketball	1	18	Freshman	Phys. Ed.
	2	18	Freshman	Phys. Ed.
	3	20	Junior	Phys. Ed.
	4	20	Junior	Soc. Stud.
	5	21	Junior	Phys. Ed.
	6	21	Senior	Phys. Ed.
	7	21	Senior	Bus. Ed.
Softball	1	18	Freshman	Broadcast.
	2	19	Freshman	Business
	3	19	Freshman	English
	4	20	Sophomore	Phys. Ed.
	5	21	Sophomore	Phys. Ed.
	6	21	Junior	Phys. Ed.
	7	20	Senior	Psychology
Tennis	1	18	Freshman	Home Ec.
	2	18	Freshman	Business
	3	19	Freshman	Elem. Ed.
	4	20	Freshman	Phys. Ed.
	5	20	Junior	Bio/Chem.
	6	20	Junior	Bus. Admin.
	7	21	Junior	Recreation
Non-Athletes	1	19	Freshman	Biology
	2	19	Freshman	Build. Cons.
	3	19	Sophomore	Elem. Ed.
	4	21	Junior	Elem. Ed.
	5	21	Junior	Elem. Ed.
	6	22	Senior	Elem. Ed.
	7	22	Senior	Bus. Admin.

APPENDIX B

Description of the Scales Used in the 16 PF Test

(Low Score Direction)		(High Score Direction)
FACTOR A		
Reserved	vs	Outgoing
The person who scores low (sten of 1 to 3) on Factor A tends to be stiff, cool, skeptical, and aloof. He likes things rather than people, working alone, and avoiding compromises of viewpoints.		The person who scores high (sten of 8 to 10) Factor A tends to be good-natured, easy-going, ready to cooperate, attentive to people, soft-hearted, and adaptable. He readily forms active groups and likes personal relations.
FACTOR B		
Less Intelligent	vs	More Intelligent
The person scoring low on Factor B tends to be slow to learn and grasp, dull, given to concrete and literal interpretations.		The person who scores high on Factor B tends to be quick to grasp ideas, a fast learner, intelligent.
FACTOR C		
Affected by Feelings	vs	Emotionally Stable
The person who scores low on Factor C tends to be low in frustration tolerance for unsatisfactory conditions, changeable, fretful, and easily emotionally annoyed.		The person who scores high on Factor C tends to be emotionally mature, stable, realistic about life, and better able to maintain solid group morale.
FACTOR E		
Humble, Conforming	vs	Assertive, Stubborn
The person who scores low on Factor E tends to give way to others, to be docile, and to conform.		The person who scores high on Factor E is assertive, self-assured, and independent-minded. He tends to be austere, a law to himself, and disregards authority.

APPENDIX B (continued)

FACTOR F

Sober, Serious	vs	Happy-Go-Lucky, Lively
The person who scores low on Factor F tends to be restrained, reticent, introspective. He tends to be a sober, dependable person.		The person who scores high on this trait tends to be cheerful, active, frank, expressive, and carefree. He is frequently chosen as an elected leader.

FACTOR G

Expedient, Evades Rules	vs	Conscientious, Rule-bound
The person who scores low on Factor G tends to be unsteady in purpose. He is often casual and lacking in effort for group undertakings and cultural demands.		The person who scores high on Factor G tends to be exacting in character, dominated by sense of duty, persevering, responsible, planful, "fills the unforgiving minute."

FACTOR H

Shy, Restrained	vs	Venturesome, Uninhibited
The person who scores low on this trait tends to be shy, withdrawing, cautious, retiring, a "wallflower." He usually has inferiority feelings.		The person who scores high on Factor H is sociable, bold, ready to try new things, spontaneous, and abundant in emotional response. His "thick-skinnedness" enables him to face wear and tear in dealing with people and grueling emotional situations without fatigue.

FACTOR I

Tough-minded, Self-reliant	vs	Tender-minded, Dependent
The person who scores low on Factor I tends to be practical, realistic, masculine, independent, and responsible. He is sometimes unmoved, hard, smug.		The person who scores high on Factor I tends to be tender-minded, daydreaming, artistic, feminine He is sometimes demanding of attention and help, impatient, and impractical.

APPENDIX B (continued)

FACTOR L

Trusting, Adaptable	vs	Suspicious, Hard to Fool
The person who scores low on Factor L tends to be free of jealous tendencies, adaptable, cheerful, uncompetitive, concerned about other people, a good team worker.		The person who scores high on Factor L tends to be mistrusting and doubtful. He is often involved in his own ego, is self-opinionated, and interested in internal, mental life.

FACTOR M

Practical, Careful	vs	Imaginative, Absent-minded
The person who scores low on Factor M tends to be anxious to do the right things, attentive to practical matters, and subject to the dictation of what is obviously possible.		The person who scores high on Factor M tends to be unconventional, unconcerned over everyday matters, self-motivated, concerned with "essential," and oblivious of particular people and physical realities.

FACTOR N

Forthright, Natural, Artless	vs	Shrewd, Calculating, Worldly
The person who scores low on Factor N tends to be unsophisticated, sentimental, and simple. He is sometimes crude and simple.		The person who scores high on Factor N tends to be polished, experienced, worldly, and shrewd. He is often hardheaded and analytical.

FACTOR O

Placid, Self-assured	vs	Apprehensive, Worrying
The person who scores low on Factor O tends to be placid with unshakable nerve. He has mature, unanxious confidence in himself and his capacity to deal with things.		The person who scores high on Factor O tends to be depressed, moody, a worrier, full of foreboding, and brooding. He has a child-like tendency to anxiety in difficulties.

APPENDIX B (continued)

FACTOR Q_1

Conservative, Traditional	vs	Experimenting, Liberal
The person who scores low on Factor Q_1 is confident in what he has been taught to believe, and accepts the "tried and true," despite inconsistencies, when something else might be better.		The person who scores high on Factor Q_1 tends to be interested in intellectual matters and has doubts on fundamental issues. He is skeptical and inquiring regarding old ideas or new ideas.

FACTOR Q_2

Group-dependent	vs	Self-sufficient, Resourceful
The person who scores low on Factor Q_2 prefers to work and make decisions with other people, likes and depends on social approval and admiration.		The person who scores high on Factor Q_2 is temperamentally independent, accustomed to going his own way, making decisions and taking action on his own.

FACTOR Q_3

Undisciplined Self-Conflict	vs	Controlled
The person who scores low on Factor Q_3 will not be bothered with will control and regard for social demands.		The person who scores high on Factor Q_3 tends to have a strong control of his emotions and general behavior, is inclined to be socially aware and careful, and evidences what is commonly called "self-respect."

FACTOR Q_4

Relaxed, Tranquil	vs	Tense, Driven
The person who scores low on Factor Q_4 tends to be sedate, relaxed, composed, and satisfied.		The person who scores high on Factor Q_4 tends to be tense, excitable, restless, fretful, and impatient.

APPENDIX C

Raw Scores For All Subjects on Each Variable of the 16 PF Test

Volleyball Subjects	A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
1	16	7	15	15	20	12	19	18	12	9	10	12	8	7	11	15
2	9	7	6	12	15	9	12	12	8	13	9	19	5	14	1	21
3	12	9	17	10	12	8	4	9	4	12	14	10	9	10	15	12
4	7	9	13	9	11	10	9	10	10	6	7	13	8	12	10	19
5	17	12	12	3	20	16	20	14	6	10	10	14	3	4	16	11
6	6	10	22	10	23	11	19	10	6	10	9	18	1	4	9	7
7	4	8	12	13	17	9	8	12	6	14	4	20	6	16	5	20

APPENDIX C (continued)

Basketball Subjects	A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
1	16	5	17	9	11	13	7	14	4	6	8	15	5	10	8	20
2	14	7	14	10	17	15	15	15	11	11	10	10	5	9	13	16
3	12	8	17	8	19	15	10	11	12	12	10	7	6	4	13	14
4	11	7	14	6	14	13	8	11	4	7	8	18	8	12	15	17
5	12	6	16	13	16	13	7	8	7	7	13	12	7	6	12	14
6	12	10	12	15	25	7	20	13	14	10	8	14	7	10	9	19
7	10	8	15	6	13	18	12	12	9	6	8	9	8	10	14	17

APPENDIX C (continued)

Softball Subjects	A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
1	8	8	18	5	20	8	12	16	6	13	11	6	6	9	11	10
2	8	10	25	9	22	12	22	12	8	10	8	8	6	8	12	6
3	12	5	9	18	22	9	22	10	10	14	8	11	10	15	8	21
4	6	8	15	5	10	12	4	18	5	10	13	12	8	16	12	5
5	12	4	12	18	23	8	14	11	9	13	11	15	15	12	8	23
6	10	8	13	6	13	11	12	13	10	8	12	6	3	10	9	6
7	15	7	16	7	14	18	3	8	6	9	7	14	10	6	13	17

APPENDIX C (continued)

Tennis Subjects	A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
1	16	10	20	13	26	14	21	10	8	14	6	6	8	7	15	9
2	14	7	15	13	26	9	17	16	4	11	9	16	6	5	10	13
3	19	8	15	9	19	10	24	18	9	7	9	13	1	4	8	7
4	8	6	17	9	7	17	6	9	2	22	8	10	6	12	16	13
5	9	7	19	9	24	19	12	16	7	13	12	10	4	10	10	13
6	7	11	15	6	21	9	11	12	10	8	8	8	2	13	16	14
7	6	9	17	16	21	4	25	14	14	10	6	12	12	10	5	19

APPENDIX C (continued)

Non-Athletes	A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
1	14	9	17	16	16	16	18	12	10	6	9	14	4	12	17	18
2	6	8	18	2	8	18	7	18	7	8	12	12	1	8	11	11
3	5	11	10	6	13	12	5	14	8	8	15	9	4	10	13	13
4	7	10	18	9	14	12	5	13	5	12	11	8	5	16	17	13
5	10	12	16	5	16	17	7	18	6	23	12	14	5	6	15	13
6	18	7	20	8	21	15	21	20	6	12	10	13	2	6	12	12
7	10	11	15	11	19	13	10	14	12	14	7	8	8	10	12	11

APPENDIX D

Direct Concept Validities of the 16 PF Test

Source Trait															
A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
79	35	70	63	83	67	92	70	49	44	41	71	62	70	68	57

Indirect Concept Validities of the 16 PF Test

Source Trait															
A	B	C	E	F	G	H	I	L	M	N	O	Q_1	Q_2	Q_3	Q_4
96	95	95	91	96	94	95	96	91	74	63	84	83	90	93	93

Notes: Tables based on 606 males and females.
Decimal points have been omitted.

VITA

LYNN BEST

The writer was born in Springfield, Illinois, on September 14, 1955. She graduated from Edinburg High School in Edinburg, Illinois, then entered Greenville College in the fall of 1973 and majored in physical education. She competed for Greenville in volleyball, basketball, softball, tennis, and field hockey and was named Most Valuable Player in three of those five sports. While at Greenville, she was also selected as the Outstanding Senior Woman Athlete and the Outstanding Physical Education Major.

The author graduated Cum Laude from Greenville College in 1977 and accepted a graduate assistantship at Greenville for the 1977-78 school year. She is presently teaching and coaching at John Brown University in Siloam Springs, Arkansas. She received an M.S. in Physical Education from Eastern Illinois University on August 10, 1980